



FEMA



# Levee Mapping - Complying with 44 CFR 65.10

## What are the Requirements of 44 CFR 65.10?

In order for a levee to be accredited by FEMA and shown on a FIRM as providing protection from the base flood, a levee must first be certified by a Professional Engineer or a Federal Agency that designs levees. Levees are accredited when levee owners, communities, or other interested parties provide appropriate data and documentation demonstrating compliance with 44 CFR 65.10 in the following five areas: General Criteria, Design Criteria, Operation Plans and Criteria, Maintenance Plans and Criteria, and Certification Requirements. Communities with levees are not required to demonstrate compliance with 44 CFR 65.10, but must do so for any levee they wish to have recognized on a FIRM.

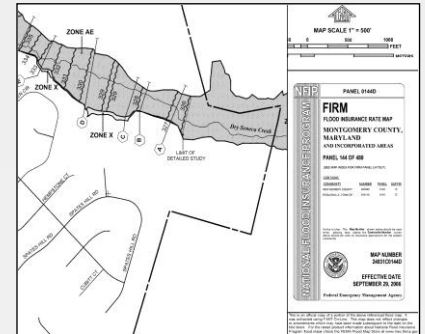
### General Criteria

FEMA will recognize only those levees that meet, and continue to meet, minimum standards consistent with the level of protection sought through comprehensive floodplain management criteria found in 44 CFR Section 60.3.

### Design Criteria

A registered Professional Engineer must certify data and documentation demonstrating the structural design criteria are met. The submitted documentation must include certified “as built” plans. Additionally, recent photographs of the levee, including embankments and levee closures, while not required, will be helpful to FEMA in performing the review. Mandatory information includes:

- Freeboard design, including that for riverine and coastal levees
- Closure designs showing all openings have closure devices, closures are designed according to sound engineering practice and are a structural part of the levee during operation
- Embankment protection demonstrating no appreciable erosion of levee embankment during the base flood



## Code of Federal Regulations

Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations (44 CFR 65.10) is titled, “Mapping of areas protected by levee systems.” It provides the minimum design, operation, and maintenance standards levees must meet and continue to meet in order to be recognized as providing protection from the base flood (also known as one-percent-annual-chance flood) on Flood Insurance Rate Maps (FIRMs).

The Federal Emergency Management Agency (FEMA) recognizes (accredits) levees based on data and documentation provided by a community or other responsible party.

FEMA review is solely for establishing flood hazard zones and does not constitute a determination as to how a levee will perform during a flood event. If a levee is accredited, FEMA will reflect the levee as providing protection from the base flood on the FIRM.

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- Embankment and foundation stability analyses evaluating expected seepage during base flood loading conditions, including flooding depth, duration, penetrations, and other seepage and stability factors
- Settlement analysis assessing potential freeboard loss due to settlement, showing that minimum freeboard will be maintained
- An interior drainage analysis identifying the source(s) and magnitude of interior flooding performed by a registered Professional Engineer
- In some unique situations FEMA may require additional design criteria to ensure the levee provides adequate risk reduction

### Operations and Maintenance Plans and Criteria

The Operations and Maintenance (O&M) plans must include information fulfilling the minimum requirements of 44 CFR 65.10(C) and 44 CFR 65.10 (D). The O&M of the levee must be under the jurisdiction of an approved agency and officially adopted by that agency. Official adoption generally requires a vote by a governing body.

### Certification Requirements

Data submitted to support a given levee complies with the structural requirements outlined above must be certified by a registered Professional Engineer, along with certified as-built plans for the levee. Certification, as defined in 44 CFR 65.2(b), is a statement that the submitted information is accurate and in accordance with sound engineering practices.

### Accredited Levees Still Present Residual Risks

Even after the Professional Engineer certification and FEMA accreditation processes are completed, there is still a flood risk associated with

levees. While levees are designed to reduce risk, even properly maintained levees can fail or be overtopped by large flood events. *Levees reduce risk, they do not eliminate it.*



Many communities and public agencies seek the minimum one-percent-annual-chance level of flood risk reduction. However, this cannot be viewed as a health and safety standard; it is simply a level of flood risk.

### Living with Levees – It’s a Shared Responsibility

FEMA and other government agencies are working to make citizens aware of their risk through various forms of outreach including fact sheets such as this. Most local officials have adopted protocols and procedures for ensuring public safety and individual property owners are learning more about their risk and the steps for protecting their families, businesses, and communities from the threat of flooding.

Remember, levees are not fail proof – protect your future by knowing your flood risk, knowing your role in reducing the risk from flood, and taking the steps today to ensure the safety of lives and property in areas behind levees.



### For More Information

- To review 44 CFR, please visit: [www.access.gpo.gov/nara/cfr/waisidx\\_00/44cfrv1\\_00.html](http://www.access.gpo.gov/nara/cfr/waisidx_00/44cfrv1_00.html).
- For a formatted version of 44 CFR 65.10, it can be downloaded at: [www.fema.gov/library/viewRecord.do?id=2741](http://www.fema.gov/library/viewRecord.do?id=2741).
- For additional information on levees, please visit: [www.fema.gov/plan/prevent/fhm/lv\\_intro.shtm](http://www.fema.gov/plan/prevent/fhm/lv_intro.shtm).
- For additional information on flood hazard mapping, please visit: [www.fema.gov/plan/prevent/fhm/index.shtm](http://www.fema.gov/plan/prevent/fhm/index.shtm).